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Soran University – Faculty Of Engineering

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CPU & Types of CPU

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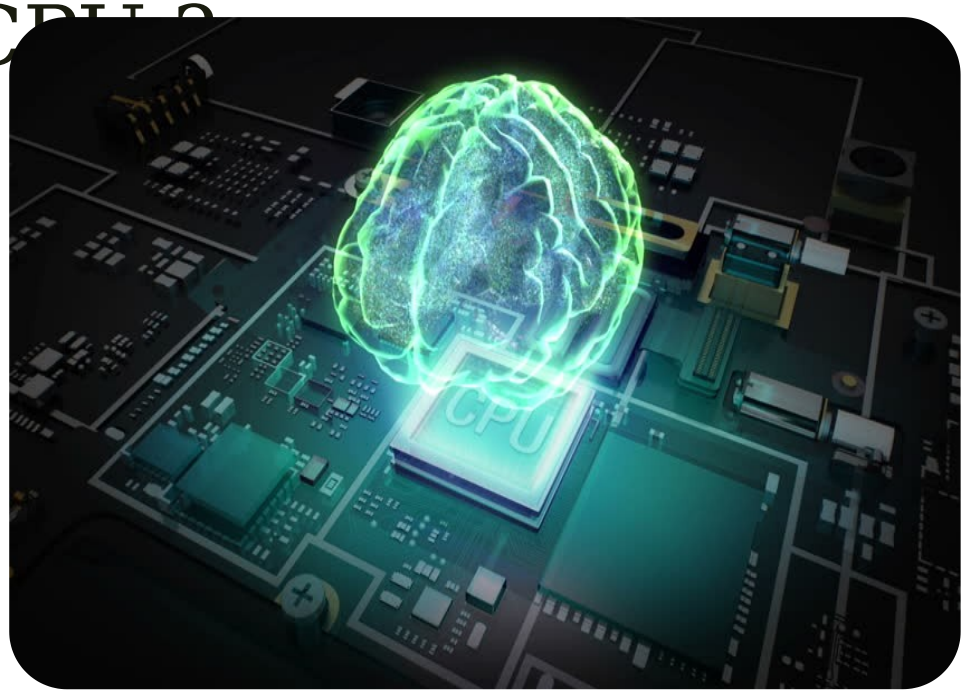
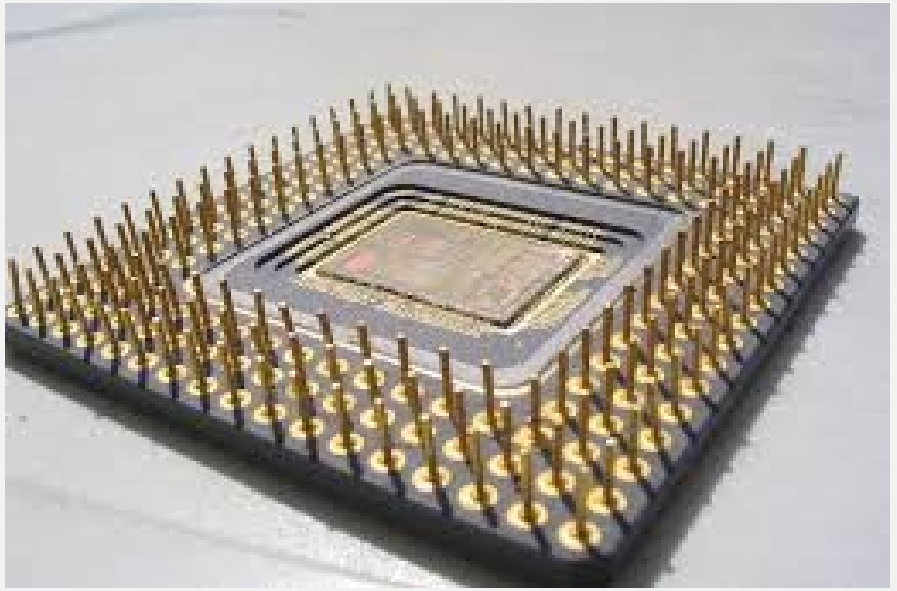
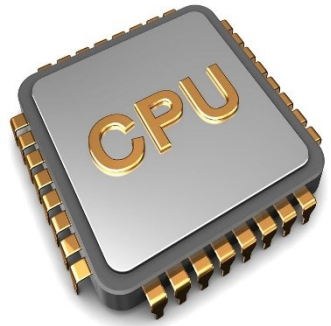


❖ What is the CPU ?

- The **CPU** is short for the Central Processing Unit.
- It is the main part of the computer where instructions are processed.
- The central processing unit includes the main memory.
- Now a day's most computers have more than one **CPU** to provide better speed.



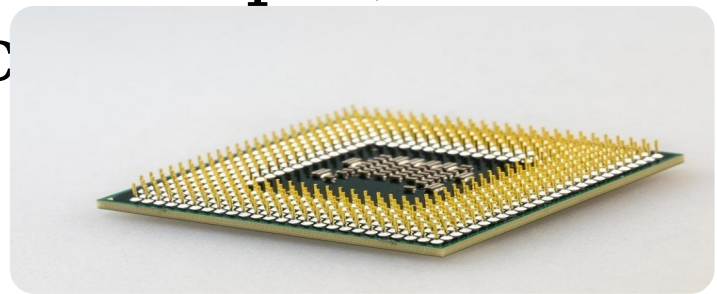
❖ CPU Definition :



- **CPU** comes from "Central Processing Unit." The CPU is the primary component of a computer that processes instructions.

- It runs the operating system and applications, constantly receiving input from the user or active software programs.

- It processes the data and produces output, which may be stored by an applic displayed on the screen.



❖Where CPU is located in the computer?

- This CPU is placed on the CPU socket center around the VRM section of the motherboard connected with the other hardware elements inside the computer cabinet. The CPU is a square shape chip in view, consisting of a thin layer of thousands of transistors.

- **CPU**s are made so that microscopic transistors could place in a single microcomputer chip in the number of billions.

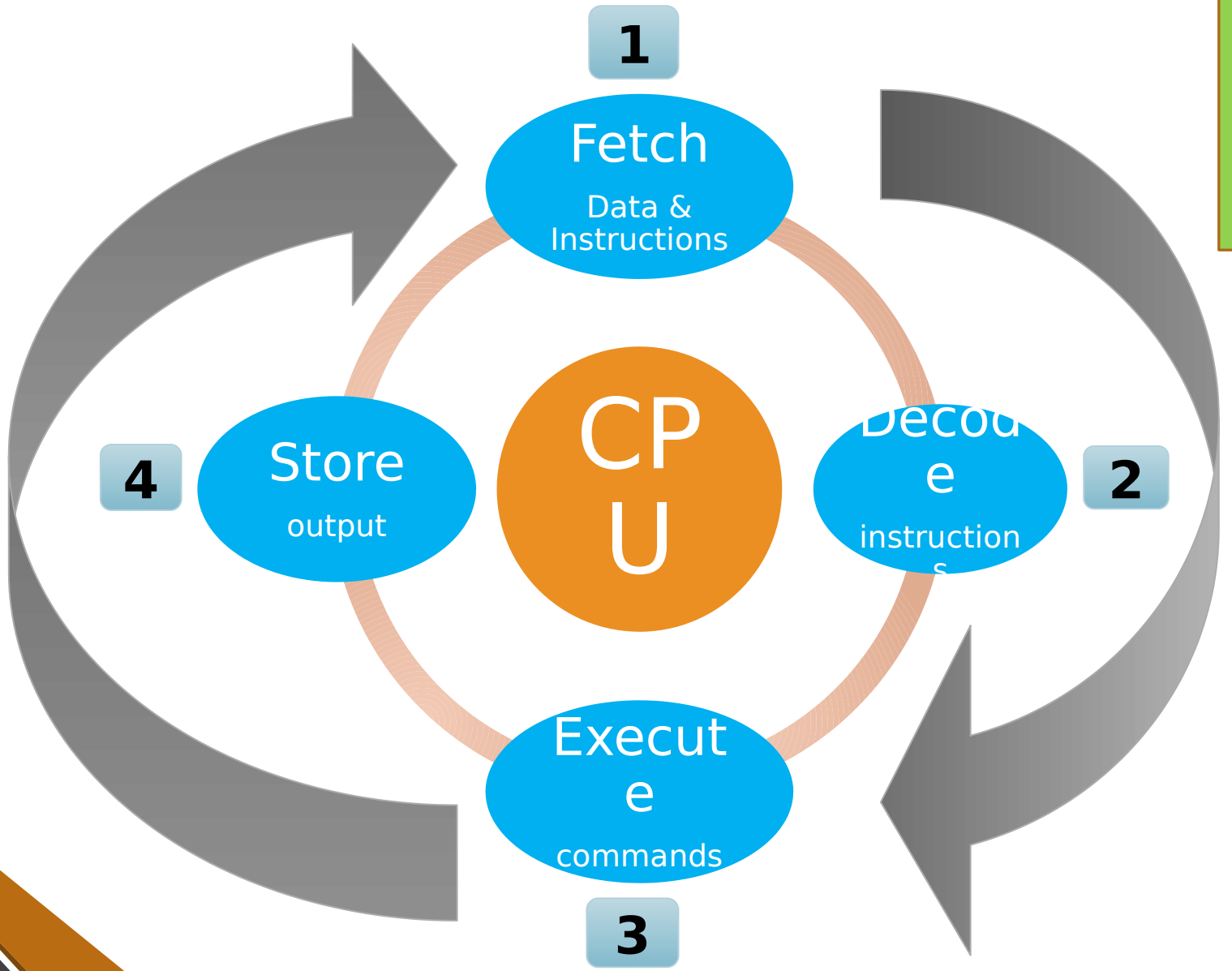
❖ What is the Function of CPU in Computer?

The main function of CPU in the computer is to store and process by performing all the mathematical and logical calculations with the input data to provide the output data to the users, thereby working on the computer.

▪ The function of CPU in 4 Steps:

1. The CPU receives the data when the computer inputs the data through input devices such as a keyboard or mouse.
2. After this, the **CPU** process these input data by performing calculations and technical algorithm.
3. And then **CPU** provides the processed data through output devices such as on the monitor screen.

❖ How CPU Works ?



Since creation and development, improvement of the CPU, Fetch, Decode and Execute are the fundamental functions of the CPU. Let us know the function of each of them in detail.

The processors will carry out this cycle over and over millions of time per second

❖How CPU Works ?

It processes instructions that it gathers from decoding the code in programs and other such files . A CPU has four primary functions:

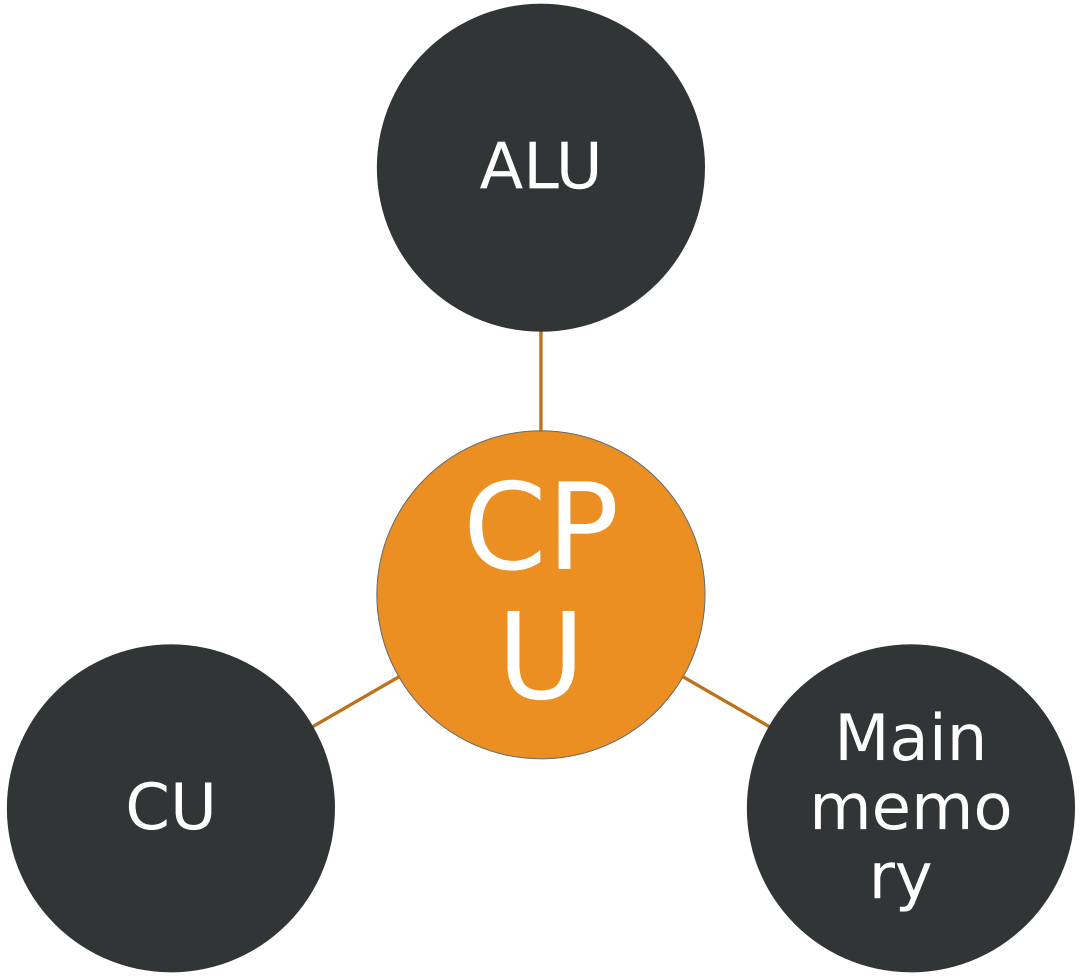
1. Fetch: Retrieves the instruction that it needs to run from program memory.

2. Decode: Breaks the code down to Machine code.

3. Execute: Calculate extremely complicated mathematical functions and move data from one memory location to another.

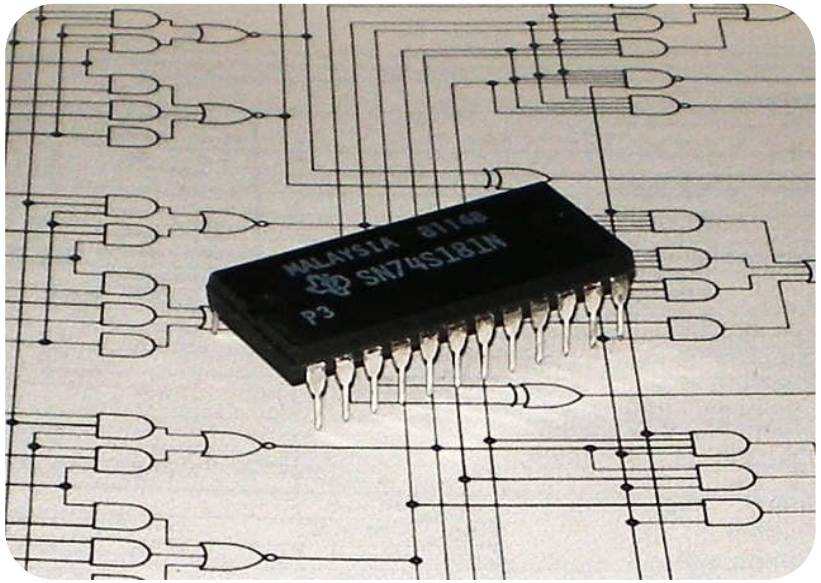
4. Store : Takes the output and writes it into the computer’s memory

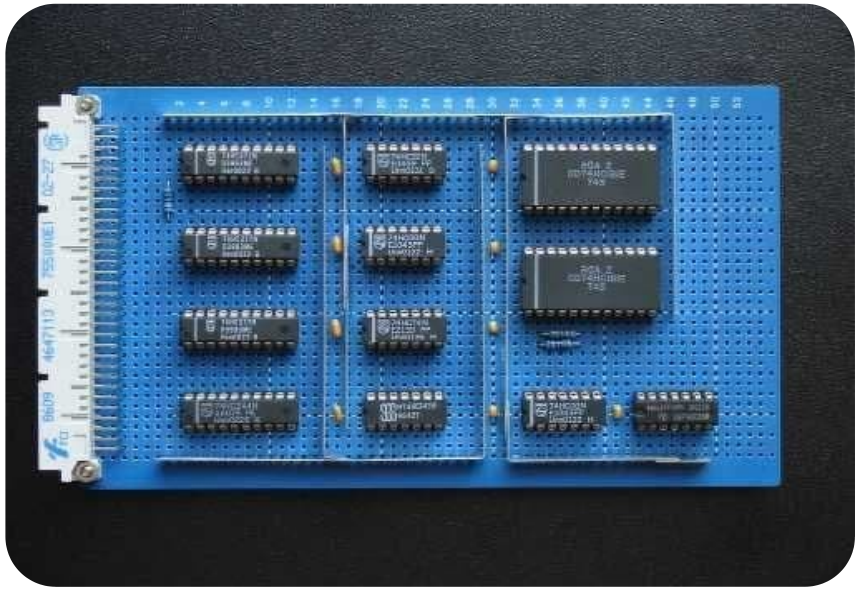
❖ Components Of CPU :



1. Arithmetic Logic Unit (ALU) :

The Arithmetic and Logical Unit is responsible for arithmetical and logical calculations as well as taking decisions in the system. It is also known as the mathematical brain of the computer. The ALU makes use of registers for the calculations. It takes input from input registers, performs operations on the data, and stores the output in an output register.





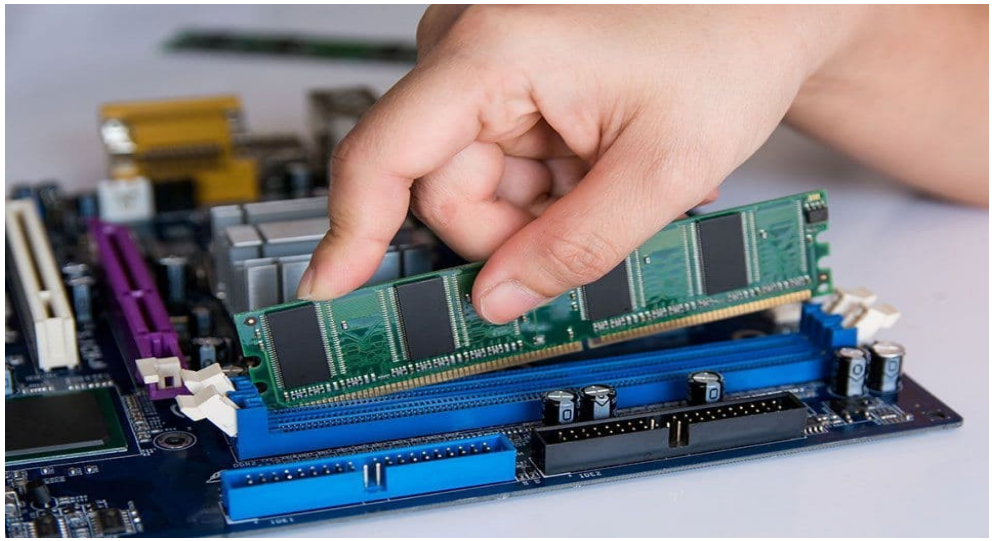
2.Control Unit (CU) :

The control unit controls the way input and output devices, the Arithmetic, and Logic Unit, and the computer’s memory respond to the instruction sent to the CPU. It fetches the input, converts it in a decoded form, and then sends it for processing to the computer’s processor, where the desired operation is performed. There are two types of Control units – the Hardwire CU and the Micro programmable CU.

3.Main memory :

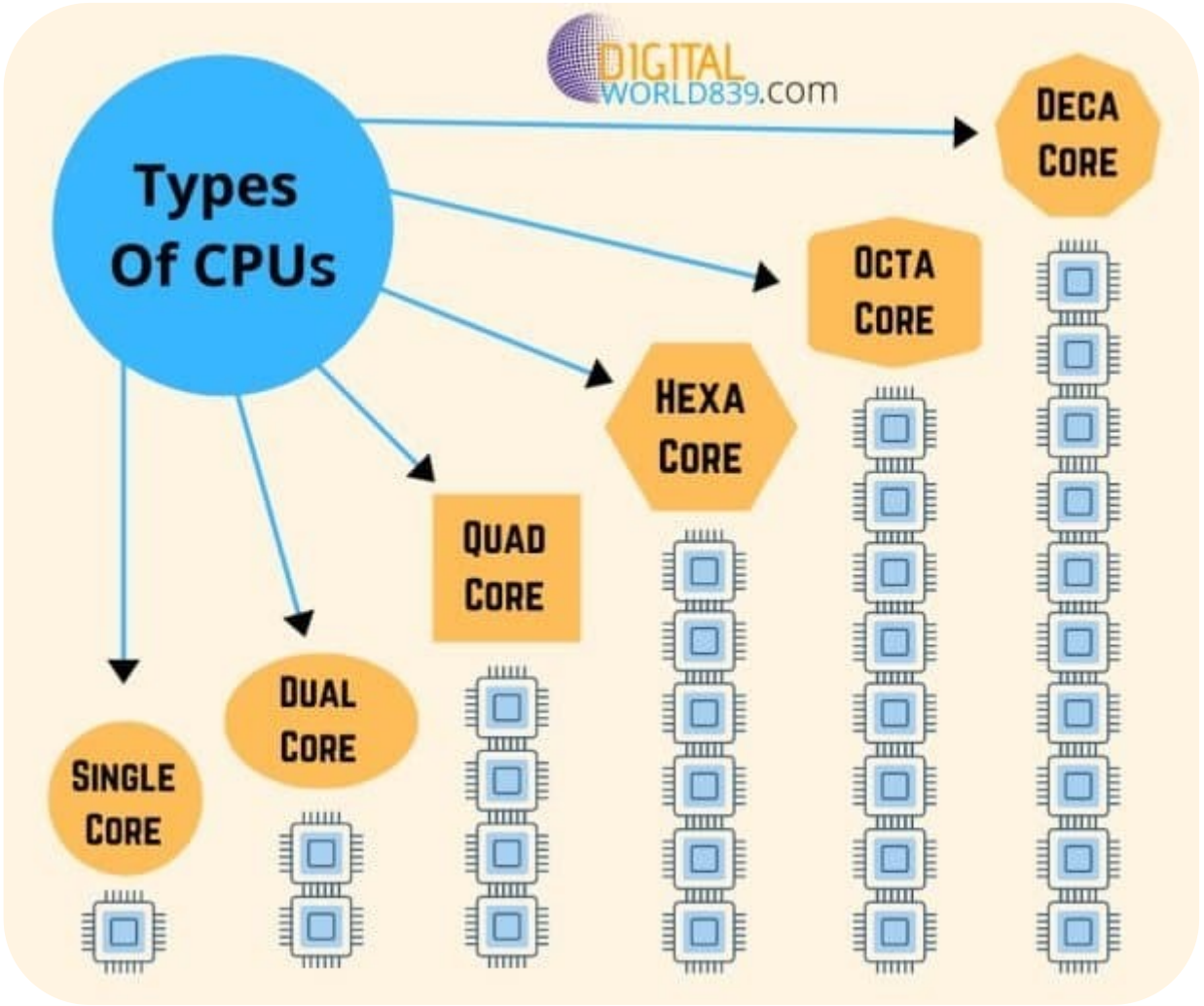
The Main memory is where programs and data are kept when the processor is actively using them. When programs and data become active, they are copied from secondary memory into main memory where the processor can interact with them.

Main memory is sometimes called RAM. (RAM stands for Random Access Memory)

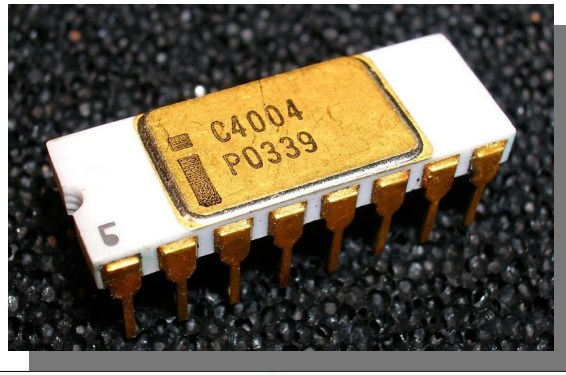


Types of CPU :

1. Single Core
2. Dual Core
3. Quad Core
4. Hexa Core
5. Octa Core
6. Deca Cora



1.Single core :



The single-core CPU is the oldest type available and it was introduced in the early history of computing this was the only one that could be used in computers.
It was possible to carry out certain tasks, but it was a bit slow.

Single-core CPUs can perform only one operation at a single point in time, that’s why they are not a very good choice at multitasking.

CPU (Processor)	1. Single Core CPU
No. of Cores	1
Launched	Intel released their first Single-core processor in the Year **1971.**
Name	Intel 4004
Speed and Cache Level	740 KHz and 640 bytes of RAM.

2. Dual core :

A dual-Core CPU is actually a single CPU, but it is comprised of two cores on the chip that's why this CPU functions like two CPUs.

The clock speed of this processor also almost doubles make it possible to handle multitasking more comfortably and much better than processors that have only one core.

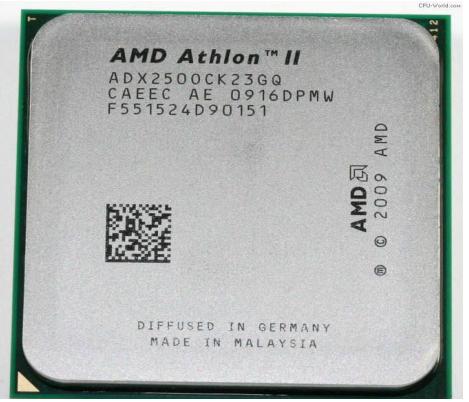
Dual-core CPU[illegible] more than one operation at t[illegible]t a higher speed.

CPU (Processor)	2. Dual Core CPU
No. of Cores	2
Launched	Intel released their first Dual-core processor in the Year **2005.**
Name	Pentium D
Speed and Cache Level	2.80 GHz and 2 MB of Cache.

3. Quad core :

The term Quad indicates the 4 cores present in the processor characterized by taking into account speed and power consumption, they also have great capabilities for multitasking in comparison to the single and dual-core CPUs.

It has four cores working simultaneously, capable of performing any task for which it has been intended, at high speed, and above all, performing several tasks at the same time. It is the immediate antecedent of what would later be the 8 or10 core CPUs.



CPU (Processor)	3. Quad Core CPU
No. of Cores	4
Launched	AMD released their first Quad-core processor in the Year **2009**.
Name	Athlon II X4
Speed and Cache Level	3 GHz and 2 MB of Cache.

4. Hexa core

The Hexa Core CPU has six cores on the chip to execute the task and transmit all data more rapidly as compared to quad-core and dual-core processors.
Therefore, its working speed, clock speed, performance will be faster and will also be more suitable for multitasking.

The first Hexa core CPU was launched in Intel core i7 processor in 2010.

CPU (Processor)	4. Hexa Core CPU
No. of Cores	6
Launched	Intel released their first Hexa-core processor in the Year **2010**.
Name	Intel core i7-980X
Speed and Cache Level	3.60 GHz and 12 MB of Cache.

5.Octa Core :

The octa core CPU as its name suggests another multi-core processor are consists of 8 cores, which takes the performance and speed of multitasking to a different level than the above CPU processors for any computer device.

Numerous octa-core CPU processors comprise a dual set of quad-core processors that separates various activities between the different sorts that’s why it is also known as a “dual quad-

CPU (Processor)	5. Octa Core CPU
No. of Cores	8
Launched	Intel released their first Octa-core processor in the Year **2014**.
Name	Intel Core i7-5960X
Speed and Cache Level	3.50 GHz and 20 MB of Cache.

6.Deca Core :

The Deca core comes with 10 cores where the Deca processors are developed with eight autonomous cores to execute a task will be much efficient and rapid than all the core processors until now.

It is the most powerful and successful CPU than th cessors for any compute

CPU (Processor)	6. Deca Core CPU
No. of Cores	10
Launched	Intel released their first Deca-core processor in the Year **2017**.
Name	Xeon Silver 4114T
Speed and Cache Level	3 GHz and 13.75 MB of Cache.

Conclusion:

The above listed different types of CPUs are the significant processors in the computer world for increasing the speed and performance of our computing devices from mobile phones to laptops and desktops. And now the article on different types of central processing units ends.

Any question

{ Thanks for attention }

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